

Authors

Euval S. Barrekette

A.B., 1952, Columbia College; B.S. in C.E., 1963, and M.S. in Engineering Mechanics, 1956, Columbia University School of Engineering; Ph.D. in Engineering Mechanics, 1959, Columbia University Graduate Faculty. Assistant Professor of Civil Engineering, Columbia University, 1959-1960. Joined IBM in 1960 for work in applied mechanics and optics. Is currently at the Thomas J. Watson Research Center as technical assistant to the IBM Director of Research. Member of Phi Beta Kappa, Tau Beta Pi, Sigma Xi, New York State Society of Professional Engineers, American Institute of Aeronautics and Astronautics, and American Society of Civil Engineers.

Hollis L. Caswell

Ph.D. in Engineering Physics, 1958, Cornell University. Joined IBM Research in 1957 as member of the Thin-Film Technology group. Previous work includes studies of effects of residual gases on film characteristics, ultra-high vacuum techniques, and thin-film properties. He is presently manager of the Integrated Circuit Technology group at the Thomas J. Watson Research Center, Yorktown Heights, N. Y. Member of Sigma Xi, Phi Beta Kappa, and the American Physical Society.

Robert T. Chien

B.S., Electrical Engineering, 1954; M.A., Mathematics, 1957; and Ph.D., Electrical Engineering, 1958; University of Illinois. Joined IBM Research in 1958 as member of Engineering Science Department working at the Thomas J. Watson Research Center, Yorktown Heights, N. Y., Research interests have centered on linear graph theory, the theory of error-correcting codes, and memory systems. Member of Tau Beta Pi, Sigma Xi, Research Society of America, and the Institute of Radio Engineers.

Hirsh G. Cohen

B.S. in Applied Mathematics, 1947, University of Wisconsin; M.S. in Applied Mathematics, 1948, Brown University; Ph.D. in Mathematics, 1950, Brown University. Research Assistant and Rockefeller Fellow, Brown University, 1947-50. Assistant Professor, Pennsylvania State University, 1950-51. Research Associate, Israel Institute of Technology, 1951-53. Assistant Professor, Carnegie Institute of Technology, 1953-55. Senior Engineer, North American Aviation, 1955. Associate Professor, Rensselaer Polytechnical Institute, 1955-57. Professor,

Rensselaer Polytechnic Institute, 1957-59. Fulbright Visiting Research Professor, Technological University, Delft, The Netherlands, 1958-59. Joined IBM Research in 1959, working in problems in fluid mechanics and the phenomenological theory of superconductivity. Presently Manager, Applied Mathematics Group, Mathematical Sciences Department, Thomas J. Watson Research Center, Yorktown Heights, N. Y. Member of Sigma Xi, American Mathematical Society, and SIAM.

Paul R. Daher

A.A., 1951, Potomac State College; B.S. in Electrical Engineering, 1959, University of Santa Clara. Joined the IBM Advanced Systems Development Division in 1959 at the San Jose laboratory working in the implementation of error detection and correction theory.

James E. Dammann

B.S., University of Illinois, 1956; M.S., University of Michigan, 1958. Joined IBM Development Laboratories in 1959 to begin work in the areas of computer audio output, digital displays, and automatic speech recognition. He is currently Manager of Exploratory Input/Output Technology at the Data Systems Division in Poughkeepsie. Member of Phi Beta Kappa, IEEE, ACM, and the Acoustical Society of America.

Charles V. Freiman

A.B., 1954, Columbia College; B.S., 1955; M.S., 1956; Eng. Sc. D. (Electrical Engineering), 1961, School of Engineering, Columbia University. Instructor in Electrical Engineering, Columbia University from 1956 to 1960. Joined IBM in 1960, working from that time with the Coding and Network Theory group of the Thomas J. Watson Research Center in Yorktown Heights, N. Y. Member of IEEE, ACM, TBP, HKN, and RESA.

Harlow Freitag

B.S. with honors, 1955, New York University; M.S., 1957, and Ph.D., 1959, Yale University. Joined IBM in 1958 in Poughkeepsie, transferred in 1961 to the Thomas J. Watson Research Center in Yorktown Heights, N. Y., working first in optics and optical communication theory and, presently, in the area of integrated circuitry. Won the Frances Mills Turner Award of the Electrochemical Society in 1961. Member of the American Physical Society, the Electrochemical Society, and Sigma Xi.

Martin C. Gutzwiller

M.S. in Physics, Swiss Federal Institute of Technology, 1950; Ph.D. in Physics, University of Kansas, 1953. Physicist with Brown, Boveri & Cie., Baden, Switzerland, 1950. At Shell Development Co., Houston, Texas, worked on geophysical problems from 1953 to 1960. Joined IBM Research in 1960 as theoretical physicist, working in applied mathematics, quantum statistics, and theory of ferromagnetism. Presently at the IBM Watson Research Laboratory in New York City. Member of American, Swiss, and French Physical Societies, and Sigma Xi and Adjunct Associate Professor of Metallurgy at Columbia University.

Thomas J. Harris

B.S. cum laude, 1954, University of Buffalo; M.S., 1960, University of Rochester. Previously was Member of the Technical Staff, Bell Telephone Laboratories, working on telephone switching systems, solid state devices and circuitry. At General Dynamics Electronics (Stromberg-Carlson Corporation), worked in solid state circuit design and in IF amplifier development. At the University of Rochester, Mr. Harris was engaged in instrumentation for optical equipment and design of a servomechanism for a rocket spectrometer; was also instructor in electronic circuitry. Joined Data Systems Development Laboratory in Poughkeepsie in 1961, where he supervised the development and construction of a high-power pulsed ruby laser system. He is currently developing a solid state cw laser system and investigating the uses for the laser beam and electro-optic devices. Member of IEEE, OSA, and Pi Mu Epsilon.

Randolph Hartvig Jeppesen

B.A. in Physics and Mathematics, 1958, Montana State University; M.S. in Physics, 1960, University of Illinois. From 1960 to 1961 worked in low temperature physics at the Thomas J. Watson Research Center, Yorktown Heights. Since 1961 has been Instructor in Physics at the Montana State University, Missoula, Montana. Member of Phi Kappa Phi and Pi Mu Epsilon.

Robert W. Keyes

M.S., 1949, and Ph.D., 1953, University of Chicago. Worked in solid state physics at the Westinghouse Research Laboratory until May, 1960, when he joined IBM Research. He is currently at the IBM Thomas J. Watson Research Center, Yorktown Heights, N. Y. Member of American Physical Society.

Ta-Cheng Ku

B.S.M.E., 1946, National Pei Yang University; M.S.M.E., 1950, University of California; Ph.D., 1953, University of California. Joined IBM in 1953 as As-

sociate Engineer in the Physical Technology Department of the General Products Division Laboratory in Endicott, N. Y. Interests include investigation of print quality, mechanism of carbon transfer, photoelasticity, vibration, friction and wear. Presently Manager of the Physical Technology Department at Endicott.

R. Scott McDuffie

B.S., 1960, M.S. in Mathematics, 1961, Stanford University. Joined IBM San Jose Research Laboratory in 1961, working in numerical analysis and computer programming with emphasis on gas film lubrication problems. Member of Association for Computing Machinery.

Willard L. Miranker

B.A., Mathematics, New York University, 1952; M.S., Mathematics, New York University, 1953; Ph.D., Mathematics, New York University, 1957. Teaching Fellow, Cornell University, 1952; Research Assistant, Institute of Mathematical Sciences, N.Y.U., 1954-57; Member of Technical Staff, Bell Telephone Laboratories, Inc., 1957-58. Joined IBM as Staff Mathematician in 1959 and has been at the Thomas J. Watson Research Center, doing research in nonlinear wave phenomena and in optimization problems. Is now Visiting Professor, California Institute of Technology. Member of the American Mathematical Society, Phi Beta Kappa, Pi Mu Epsilon, Mu Chi Sigma and Sigma Pi Sigma.

Geza Schay, Jr.

B.A., 1956, Eötvös University (Budapest, Hungary); Ph.D. in Mathematical Physics, 1961, Princeton University. Joined IBM in 1960 as a staff mathematician in the Advanced Systems Development Division. Presently at George Washington University on educational leave from the Advanced Systems Development Division Laboratory, Yorktown Heights, New York. Prior to joining IBM he worked at the Central Research Institute for Physics in Budapest, Hungary, at the Research Laboratory of Electronics of MIT, and taught physics at Tufts University.

Edward J. Skiko

B.E.E., 1957, Manhattan College; M.E.E., 1962, Syracuse University. Currently an IBM Doctoral Fellow at the Electrical Engineering Department, Systems Laboratory, Stanford University. Joined IBM in 1957 at the Poughkeepsie Product Development Laboratory, performing computational analysis of transient performance and reliability of transistor circuits. Was subsequently engaged in exploratory development of display subsystems, and computer audio output and speech recognition techniques. In 1961 joined the staff of the IBM Teleprocessing Laboratory, where he did technical plan-

ning for a total-system approach for the insurance industry. Member of Eta Kappa Nu and the IEEE.

Willem Stuiver

Ir (M.S.), 1951, Delft, Netherlands; Ph.D. in Engineering Mechanics, 1960, Stanford University. Joined IBM in 1959 at the San Jose Research Laboratory, working on problems in system dynamics. Was previously employed by New Zealand Department of Scientific and Industrial Research and by General Electric Company, Cincinnati, Ohio, working on problems in fluid dynamics and gas turbine design. Now Associate Professor of Mechanical Engineering at University of Hawaii. Current research interests are variational dynamics, stability of motion, and theory of optimization. Member of Sigma Xi, American Society of Mechanical Engineers, and American Society for Engineering Education.

George O. Tarnawsky

B.S. in E.E., 1956, Newark College of Engineering. Joined IBM in 1956 to work on transistorized power supply regulators and frequency converters at Product Development Laboratory in Poughkeepsie. In June 1958 joined the newly-formed Mechanical Translation group at IBM Research and was made responsible for the development of the automatic Russian-English dictionary. He is currently manager of Mechanical Translation in the Experimental Systems Department at the Thomas J. Watson Research Center, Yorktown Heights, N. Y.

Yih-O-Tu

B.S. in Ordnance Engineering, 1946, College of Ordnance Engineering, China; M.S. in Mechanical Engineering, 1954, Carnegie Institute of Technology; Ph.D. in Mathematics, 1959, Rensselaer Polytechnic Institute. Joined IBM in 1959 and is presently studying continuum mechanics at the Thomas J. Watson Research Center, Yorktown Heights, N. Y. Member of American Mathematical Society, American Physical Society, Society of Industrial and Applied Mathematics, American Society of Mechanical Engineers, and Sigma Xi.

R. M. Warten

B.S., 1957, Brooklyn College; M.S., 1959, and Ph.D., 1961, Purdue University. NSF Cooperative Graduate Fellowship (Purdue), 1960-61. Joined IBM in 1961 at the Federal Systems Division in Owego, N. Y., where he is concerned with problems in applied mathematics. Member, American Mathematical Society, Mathematical Association of America, Phi Beta Kappa, and Pi Mu Epsilon. He is an Associate Member of Sigma Xi.

Edward Victor Weber

B.S. 1953; M.S. 1957; Ph.D. 1959, in Electrical Engineering, Carnegie Institute of Technology. Prior to joining IBM in 1960 was research engineer in the Scientific Intelligence Section of the Syracuse University Research Corporation. Is presently engaged in display and speech recognition work at the IBM Data Systems Development Laboratory in Poughkeepsie, N. Y. Member of IEEE and Sigma Xi.